
# THE PULSE

SPRING 2007

THE OFFICIAL NEWSLETTER OF THE LOS ANGELES COUNTY FIRE DEPARTMENT EMERGENCY MEDICAL SERVICES PROGRAM

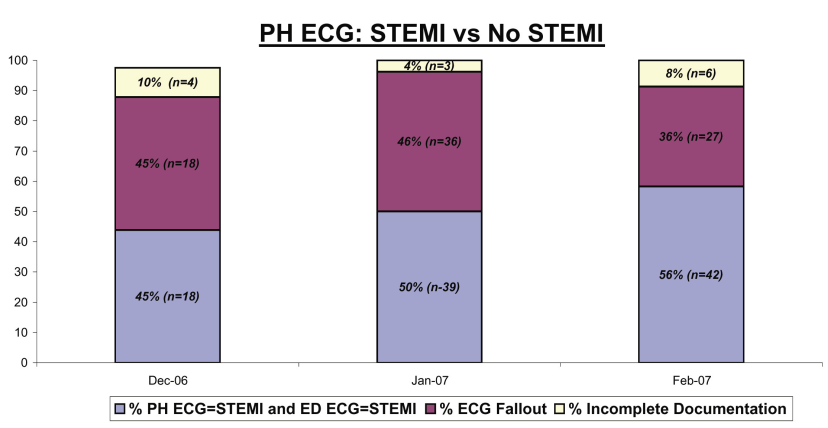

# STEMI Receiving Centers advance Cardiac Care

The last year has seen much change and movement forward in our delivery of emergency medical services. Our award winning 12-Lead ECG program has matured and is influencing care in Los Angeles County in ways unanticipated when the program started. The push of our 12-Lead program has helped lead the designation of ST Segment Elevation Myocardial Infarction (STEMI) Receiving Centers (SRC) throughout the county. On April 1, 2007, there were 22 SRCs. We anticipate 26 or more SRCs by Summer 2007.

The results for our patients have been incredible. One SRC has already cut 22 minutes off of time to blood flow to the heart because of County Fire ECGs done in the field. This equates to a 60-70% reduction in deaths at 30 days because blood flow to the heart was restored sooner. Our 12-Lead program and the designation of SRCs has also benefited the patient who walks in to the STEMI Center with chest pain because the hospital response is faster all around. Relationships between our paramedics and the hospitals have been improved by the increased communications and great patient outcomes fostered by the 12-Lead program. This is occurring all over the county. These are phenomenal outcomes.

**Los Angeles County EMS Agency**
**STEMI RECEIVING CENTER VOLUME REPORT**

| | Dec-06 | Jan-07 | Feb-07 |
|---|---|---|---|
| No. of SRCs Reporting | 3 | 12 | 14 |
| **Total Patients in Data Base (report run 3/19/07)** | **40** | **78** | **75** |
| Average Age | 66.2 | 65.8 | 61.6 |
| Male | 31 | 52 | 51 |
| Female | 9 | 26 | 24 |




***The graph above displays some of the initial SRC data showing the percentage of STEMIs confirmed by the SRC (purple area) versus the false positive STEMIs (red area) and those cases with inadequate documentation (yellow area). These numbers are improving with time.***

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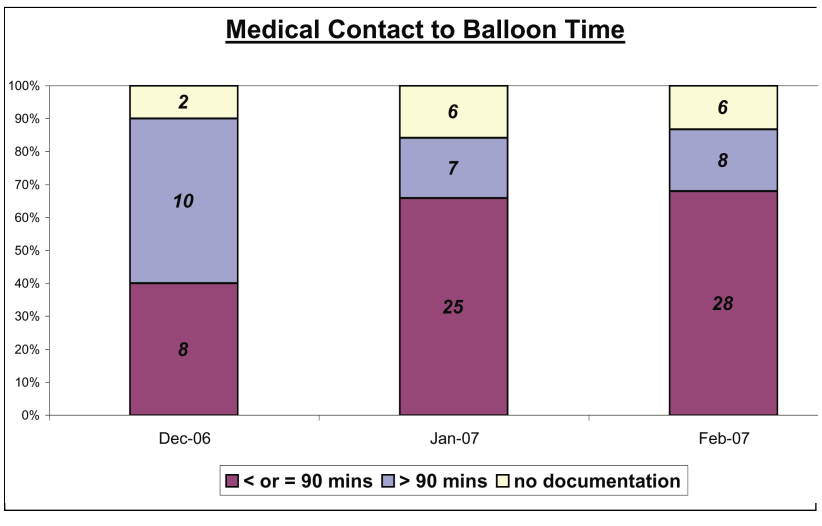
We have discovered some field circumstances that make it harder to obtain a good 12-lead ECG and are working to correct those. The "false positive" STEMI ECG can be reduced by the following:

- Good baseline tracing – ensure good electrode placement and reduce patient movement.
- No 60 cycle/electrical artifact (shave the area with short quick strokes and dry/rough the skin well with a 4 X 4 or towel).
- All 12 leads of the ECG must be seen- if unable to obtain all leads, notify the base hospital.
- If the underlying rhythm is paced or is a tachydysrhythmia, the incidence of false positives increases. Report this underlying rhythm to the base hospital.
- Perform the 12-Lead as soon as possible and at scene before the patient is placed in the ambulance and transport started whenever possible.

The base hospital will frequently verify these actions as part of the prehospital activation of the catheterization lab team at the SRC. Repeating the 12-Lead after checking these parameters is required if the patient meets criteria for a 12-Lead.

The SRCs have also noted that the ECG can change after paramedic treatment and have agreed that obtaining a second 12-Lead just as we arrive at the ER can be beneficial. We should obtain a second 12-Lead whenever possible if the:

- Patient has ongoing pain or shortness of breath, even with treatment
- The initial 12-Lead showed "***Acute MI***"




If we walk into the ER with an ECG change on the second ECG, patient treatment is changed, especially if the second ECG shows any changes from the first. These changes indicate a dynamic, very unstable patient. The ER will appreciate our help with this.

***This table displays average times from medical contact (EKG done) to cardiac catheterization lab (balloon) time.***

## YOU MAKE THE CALL

Determining the medical priority of a patient is one of the earliest and most important assessments made on every EMS call. Whether it is medical or trauma, firefighters are trained to invoke the adage: "Do I stay and play…or load and go? This edition of the Pulse highlights that decision process with the stark reality of another.

It was a cool and foggy Saturday evening when the tones sounded in the station. The crew was quickly in the rig and read the MDT text with astonishment: Baby Buried. The units briskly rolled out of the station with the squad in the lead. The unit was able to make the uphill drive faster than the engine and was on-scene first. Through the fog, they could faintly see the lights of the Sheriff's vehicle that had pulled onto a dirt access road. Following the flicker of a flashlight the Paramedic started uphill into a field of tall grass. As he approached the darkened scene, he came upon an officer and a woman standing together. "This lady was finishing her nightly jog on the trail, and noticed this as she ran by," said the officer. He pointed his flashlight down toward the ground. "It's a crime scene" he continued, "and I just wanted you up here to confirm death." As the paramedic absorbed the officer's words, his eyes followed the beam of light down to what appeared to be a shallow hole. As he knelt down with the monitor and drug box he saw the face of a partially buried baby wrapped in a blue towel. The paramedic could hear the engine crew making their way up the hill as he delicately began brushing away the soil from the face and towel. The scene became even more surreal as he uncovered one hand of the tiny newborn. Brushing the dirt from the hand, the paramedic was suddenly stunned as the tiny appendage faintly attempted to grasp his finger. In a polarizing instant he was faced with a multitude of decisions…..and here once again the question is asked, how would… YOU MAKE THE CALL?

Inside a dumpster, on the steps of a church, or even in a field; we have all heard or seen that agonizing headline one too many times: BABY ABANDONED. In 1999, the country was galvanized when a city in Texas recorded 13 abandoned infants over a ten-month period. Within the next few years, this dysfunctional behavior polarized over 46 states to enact legislation, to protect babies from being hurt or killed. California joined those ranks in September 2000, when Governor Davis signed the Safely Surrendered Baby Law. As long as the baby was not neglected or abused, this law permitted a parent or person with legal custody to confidentially surrender an infant without fear of arrest or prosecution. Since 2001, the County of Los Angeles has recorded 110 abandoned infants. Of those, 58 infants have been safely surrendered to a hospital or fire station. The ultimate goal of the program is to improve these statistics, and provide those in desperate emotional distress with a legal and anonymous way to safely give up a baby. The County's website, www.babysafela.org boldly states: "No Shame, No Blame, No Names", and concludes with a resonating message to all: "Every baby deserves a chance for a

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# DocTalk

***FROM MEDICAL DIRECTOR FRANKLIN D. PRATT, M.D.***

The LA County Fire Department is in the process of implementing the 2005 American Heart Association Guidelines. Does that strike you as odd that it's 2007 and we are just now implementing 2005 recommendations? Every three or four years the results of world wide data are gathered and analyzed to determine what modifications should be made to medical practice as evidenced by that research. The changes to medical practice have to be "agreed upon" by an International Cardiac Care Committee. Once agreed upon, the Emergency Cardiac Care Guidelines are reported to the world in an American Heart Association Update.

The Local EMS Agency (LEMSA) has approved these changes beginning January 1, 2007, provided the training in each technique or principle has been completed. However, our Department will not officially implement most of the changes until July 1, 2007 as our training is being completed at EMS Update 2007 and ACLS Initial and Recertification Courses

The initiation of the new American Heart Association Standards for Basic Life Support and Advanced Cardiac Life Support are very different from past practice.

A major goal is to increase survival from sudden cardiac death. Two interventions proven to improve survival after sudden cardiac death:

- High quality chest compressions
- Early defibrillation of ventricular fibrillation and ventricular tachycardia.

What are high quality chest compressions?

- Uninterrupted compressions that are of adequate depth and complete relaxation which produces good chest recoil.
- Compressions done fast enough to maintain vital blood flow (100 per minute) with 30 compressions: 2 ventilations in adults. 15 compressions: 2 ventilations in children and infants.
- CPR performed in units of 5 cycles (about 2 minutes) THEN- new person does CPR, check pulse and rhythm, shocks if indicated, medications administered.

If the patient has been down without CPR for more than four to five minutes, perform five cycles (about two minutes) of CPR before attempting to shock the patient, manually or with the AED. This CPR will give the patient's heart the oxygen and nutrients needed for the shock to be more beneficial. We want to reduce the number of patients we shock into asystole because their heart lacked oxygen and nutrients before the shock.

All of these actions minimize the time (no more than 10 seconds, if possible) the patient does not have chest compressions. Recent research has emphasized the role of chest recoil in helping blood flow by changes in pressure within the thorax. Chest recoil, combined with fast, deep compressions, causes more patients to have return of spontaneous circulation (ROSC) at scene. More patients survive to go home.

Hyperventilation is OUT. The changes in intrathoracic pressure caused by ventilation can reduce blood pressure and flow, defeat good CPR and worsens outcome. One breath every 10 seconds (hard to do) which will probably work out to 8-10 breaths per minute. Give the breath over one second, with enough volume to produce observable chest rise.

Amiodorone is now the antiarrhythmic of choice. Good drug for ventricular fibrillation and pulseless ventricular tachycardia. Lidocaine (beginning July 1, 2007) will no longer be carried by Los Angeles County paramedics. Amiodorone is also used for other dysrhythmias in the hospital and our use of the drug complements what is occurring in the hospital. This is the biggest reason for the change.

Early use of Transcutaneous Pacing (TCP) provides a safer, equally effective treatment for symptomatic bradycardias over atropine. After some practice, the pacing system can be applied very quickly to a patient, maybe quicker than administering a preload of atropine. The side effects of atropine (tachycardia, vision changes, dry mouth, and difficult urination) can be very uncomfortable or dangerous for a critically ill patient. When in doubt, apply the TCP.

We will use 200J for all of our defibrillation with our manual defibrillators. Recent literature has not shown any difference in ROSC, one hour survival or discharge from hospital based upon energy level used. A constant energy level keeps consistency in our treatment protocols, which reduces time to shock. That of course is one of the most important predictors of successful resuscitation.

There are many exciting changes in treatment of patients with cardiovascular disease. The role of prehospital, emergency 9-1-1 medical care, is more important for patients now than it has been in the 38 years our paramedics have been serving patients. Thank you for all of your hard work, dedication and preservation of the covenant between our patients and ourselves.

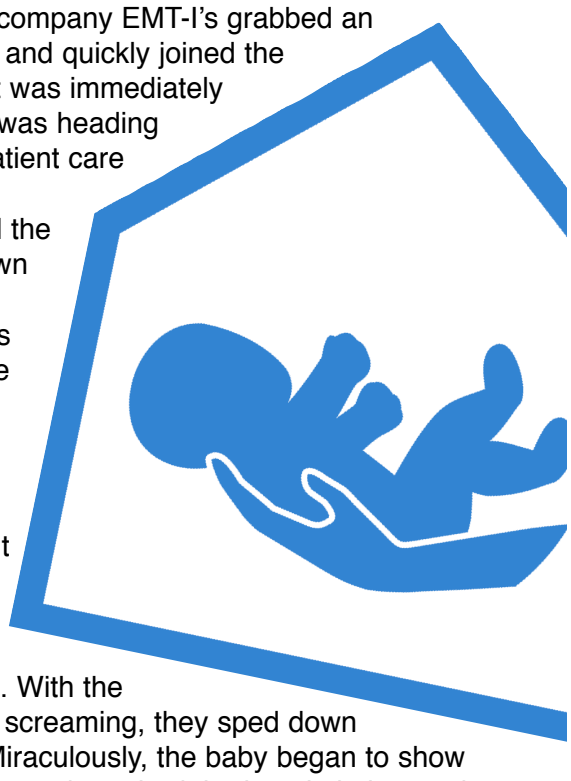
I encourage you to contact your jurisdictional EMS field nurse or the EMS Section at (323) 838-2212 with any questions. In addition you may contact me for any questions or comments: (323) 881-2471 or drpratt@fire.lacounty.gov .

# YOU MAKE THE CALL

***continued from front page***

healthy life. If someone you know is considering abandoning a newborn, let her know there are other options." Unfortunately, there are still infants who are simply abandoned with outcomes that were not as unbelievable as what occurred in this case.

Startled into action, the paramedic frantically clawed the dirt away, revealing the wrapped newborn. Without a word he grabbed the infant, jumped up, and bolted down the hill. Stimulating the baby as he ran and barking orders to the rest of the crew. Instantly, they sprang into action and rushed for the squad. What seemed like chaos rapidly came together in the seats of the unit. As the infant was un-wrapped in the back seat one of the engine company EMT-I's grabbed an obstetric kit, the resuscitator, and quickly joined the efforts. Base hospital contact was immediately made, alerting them of what was heading their way. To complete the patient care team, another EMT-I jumped behind the wheel and started the rig and frantically backed down the access road. Swiftly underway, the four firefighters continued their efforts to save the newborn. In a flurried concert, the infant was suctioned and the umbilical cord was clamped. The tiny boy was wrapped in a turnout coat to combat hypothermia and was provided blow by oxygen. It all seemed like a scene out of an action movie. With the heater blasting and the siren screaming, they sped down the hill toward the hospital. Miraculously, the baby began to show signs of life. By the time the squad reached the hospital, the newborn had a normal pulse rate, a weak cry and a strong grip. Three days later, doctor's upgraded the infant's status from serious to fair. In the following days, the hospital was inundated with calls from as far away as Australia to adopt the child.



The Safely Surrendered Baby law is in place today as an alternative to unwanted pregnancies and such painful and desperate measures. Newborns can be safely given up at any Los Angeles County hospital emergency department or fire station. The intent of these measures is to divert those in desperation from contemplating or performing the unthinkable, and altering their lives forever. On a fateful May night, the heralded and expedient action of four firefighters, gave a newborn baby boy his only opportunity to enjoy life today as a thriving 9 year old!

So on some evening when you jump into the rig to read the MDT, recall these slides from your carousel to help ….you make the call!

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